



DAMES & MOORE

A PROFESSIONAL LIMITED PARTNERSHIP

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January 24, 1991

Alaska Marine Lines
5615 W. Marginal Way Southwest
Seattle, Washington 98106

Attention: Mr. Bill Troy

Work Plan for Site Assessment
Alaska Marine Lines
Seattle, Washington

Dear Mr. Troy,

Dames & Moore is pleased to submit this work plan to provide environmental consulting services for a soil and ground-water assessment of the Alaska Marine Lines (AML) property located at 5615 W. Marginal Way Southwest, Seattle, Washington.

BACKGROUND SITE DATA

The AML site is a freight management facility where cargo and refrigerated containers are transferred between barges and trucks. The site is heavily used by vehicular traffic during working hours as container loads are delivered, stored, and transferred.

Two underground storage tanks (USTs) were removed from the site on December 13, 1990 by B&C Equipment Company. A Dames & Moore geologist monitored the excavation. One tank was a 10,000 gallon diesel UST and one was a 3,000 gallon gasoline UST. The tanks were of unknown age and both tanks are reported to have failed integrity tests conducted in April 1990 by B&C Equipment Company. During the excavation, hydrocarbon stained soils were observed. Stained soil was stockpiled in the southwest corner of the site as the tanks were removed. B&C Equipment Company disposed of the tanks. The excavation was backfilled with the stockpiled material until further characterization of the material and site subsurface could be completed.

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Prior to backfilling the excavation, three soil samples were obtained from the side walls and the bottom of the excavation and analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) (EPA Method 8020), total petroleum hydrocarbons (TPH) (modified EPA Method 8015) and extractable lead (TCLP). Benzene, toluene, ethylbenzene and xylene concentrations in the soils ranged from .025 ppm to 8.4 ppm and did not exceed the Model Toxics Control Act (MTCA) proposed cleanup levels (January 27, 1990). TPH as gasoline in the soils ranged from 560 ppm to 1,600 ppm which exceeds the MTCA proposed cleanup levels of 100 ppm for TPH as gasoline. TPH as diesel in the soils ranged from 4,400 ppm to 15,000 ppm which exceeds the MTCA proposed cleanup levels of 200 ppm for TPH as diesel. Extractable lead in soils was not detected above 1 ppm.

During the removal of the tanks, ground water was encountered at approximately seven feet below ground surface. A grab sample of the ground water was obtained and analyzed for BTEX (EPA Method 8020), TPH (modified EPA Method 8015) and extractable lead (TCLP). Benzene, toluene, ethylbenzene and xylene in the ground water ranged from 110 ppb to 1,200 ppb which exceeds the MTCA proposed cleanup levels of 5 ppb for benzene, 40 ppb for toluene, 20 ppb for ethylbenzene and 20 ppb for xylene. TPH as gasoline was not detected in the ground water. 4,900 ppb TPH as diesel was detected in the ground water which exceeds the MTCA proposed cleanup level of 1,000 ppb for TPH as diesel. 0.19 mg/l of extractable lead was detected in the ground water which exceeds the MTCA proposed cleanup level for lead in ground water.

There are two other areas of concern at the site. In the southeast corner of the site, AML personnel have observed chemical sheens on surface water run-off. A truck scale was formerly located in this area and may be a potential cause for the sheen. In the east central portion of the site a 2-inch(?) pipe is present in the pavement. The purpose of this pipe is not known.

OBJECTIVES

The overall objective of this study is to provide an assessment of the nature and extent of petroleum contamination at the site. The overall objective will be accomplished by the following activities:

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- Reviewing readily available information concerning the past and present land use in the area and at the site to evaluate potential sources of soil and ground-water contamination;
- Obtaining additional soil and ground-water samples to assess the vertical and horizontal extent of contamination, especially the potential for off-site migration of petroleum constituents;
- Determining the ground-water elevations from monitoring wells to evaluate the direction of ground-water flow;
- Evaluating the feasibility of remedial options for petroleum constituents identified in site soil or ground water.

SCOPE OF WORK

Based on the results of previous work and observations at the site, we have developed the following scope of work listed below by task:

Task 1: Historical Review

Dames & Moore will review readily available information to assess the past and present land use at the site. In addition, the review will include a search for neighboring sites or facilities within a 1/4 mile radius of the subject property along West Marginal Way. The documents will include aerial photographs, city directories, historical and current land use maps, geologic maps and agency reports such as RCRA and CERCLIS lists.

Task 2: Field Assessment

Ground penetrating radar (GPR) will be used to assess the potential for underground structures in the southeast corner of the site near the area of observed run-off sheen and in the east central portion of the site near the pipe.

To assess the horizontal extent of soil and ground-water contamination at the site, Dames & Moore will install five ground-water monitoring wells on the property in the locations shown on Figure 1. One well will be installed upgradient of the former UST locations,



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one well will be placed in the location of the former USTs and three wells will be located on the east side of the property, downgradient of the former UST locations. All drilling activities will be supervised and directed by a Dames & Moore field geologist who will also maintain logs of each boring.

Soil samples will be collected at approximately 5-foot intervals during drilling and will be monitored with an organic volatile monitor (OVM). If organic volatiles are recorded with the field screening equipment, soil samples will be taken for laboratory analysis. An estimated two soil samples per boring will be analyzed by an analytical laboratory for total petroleum hydrocarbons (TPH by modified EPA method 8015) and total lead (EPA method 6010). One soil sample from each boring will be analyzed for BTEX (EPA method 8020). The soil samples chosen for laboratory analysis will be based on field screening results of the OVM and our professional judgement.

Monitoring wells will be constructed with a 4-inch monitoring well in accordance with Ecology regulations (WAC-173-160). The monitoring well will be developed and the ground water will be sampled for TPH (modified EPA method 8015), BTEX (EPA method 602) and total lead (EPA method 6010). For quality assurance, a duplicate ground-water sample and a blank ground-water sample will be analyzed for BTEX.

Four borings will be drilled to assess the vertical extent of soil contamination at the site. One boring will be drilled in the southeastern corner of the site, one near the unidentified pipe and two borings near the former tank excavation. The boring locations are shown in Figure 1. All drilling activities will be supervised and directed by a Dames & Moore field geologist who will also maintain logs of each boring. The borings will be drilled to a confining layer or approximately 30 feet below ground surface whichever is encountered first. Soil samples will be collected at approximately 5-foot intervals during drilling and will be monitored with an organic volatile monitor (OVM). If organic volatiles are recorded with the field screening equipment, soil samples will be taken for laboratory analysis. An estimate of three soil samples per boring will be analyzed by an analytical laboratory for total petroleum hydrocarbons (TPH by modified EPA method 8015), BTEX (EPA method 8020) and total lead (EPA method 6010). The soil samples chosen for laboratory analysis will be based on field screening results of the OVM and our professional judgement. In addition, if organic volatiles are recorded with the field screening equipment in the area of the run-off sheen and the pipe, a 4-inch monitoring well may be installed using procedures previously described. Installation of monitoring



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wells will be based on field screening results of the OVM and our professional judgement. The monitoring well will be developed and the ground water will be sampled for TPH (modified EPA method 8015), BTEX (EPA method 8020) and total lead (EPA method 6010).

A surveyor will be subcontracted to locate the wells and survey the top of the well casings. This information will be used in conjunction with ground-water level readings within the wells to determine ground-water flow direction.

The temporary well located near the former USTs will be abandoned in accordance with WAC 173-160.

Task 4: Report Preparation

Following the receipt of analytical results, data collected during Tasks 1 through 3 will be evaluated and a report prepared and issued. The report will include the conclusions and results of the site assessment as well as recommendations for additional work or site remediation.

HEALTH AND SAFETY

A Dames & Moore Health and Safety Plan has been prepared for the site. All field personnel will be responsible to abide by its recommendations.

SCHEDULE

We have begun work on Task 1 and plan to complete the GPR Survey January 28 and begin our field assessment the week of February 4. Standard laboratory turnaround times, two weeks, will be requested. Following the receipt of laboratory data, the report will be prepared and issued. We anticipate the report to require approximately two weeks to prepare.



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PROFESSIONAL FEES

We propose to perform this scope of work on a time and materials basis in accordance with our Schedule of Charges and General Conditions dated July 11, 1990 which are attached. Our estimated fee for the services described above is as follows:

Task 1 Historical Review and Work Plan Preparation

Dames & Moore	\$2,600
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Task 2 Field Assessment

Dames & Moore	
Drilling	14,664
Surveyor	
GPR Survey	
Laboratory Analysis	

Total Task 2	28,900
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Task 3 Report Preparation

Dames & Moore	<u>4,000</u>
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TOTAL	\$35,500
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This estimate assumes that all work described above will be conducted. If unexpected field problems (ie. inclement weather or unexpected logistical problems) are encountered, our field exploration time and associated costs may increase. Dames & Moore will contact you if unexpected field problems occur.

Our work will be conducted, our findings obtained, and our recommendations prepared in accordance with generally accepted environmental science, geoscience, and engineering professional practices at the time the work is performed. This warranty is in lieu of all other warranties, expressed, or implied.



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Please contact us if you have any questions regarding the scope, estimated fee, and schedule of our services.

Very Truly Yours,

DAMES & MOORE

**Julie K. Macdonald
Project Geologist**

**Susan C. Kent
Project Manager**

Enclosure: Figure 1

cc: Bob Strong, Lynden Inc.
Pat Haugen, Alaska Marine Lines

**SCHEDULE OF CHARGES
UNITED STATES**

The compensation to Dames & Moore for our professional services is based upon and measured by the following elements, which are computed as set forth below.

1.0 PERSONNEL CHARGES

1.1 Charges for employees are computed by multiplying the total direct salary cost of our personnel (expressed as an hourly rate) by a factor of 2.5. The total direct salary cost shall be a sum equal to the direct payroll cost (computed by dividing the annual payroll cost by 1,940 hours) plus 40 percent of same to cover payroll taxes, insurance incident to employment, sick leave and other employee benefits. The time of a partner or retained consultant devoted to the project is charged at an assigned billing rate.

1.2 The 40 percent employee benefit factor is used for work performed by personnel assigned to offices in the United States. For work performed by personnel in our offices in other countries, it will vary depending on the employee benefits paid in the particular location.

1.3 When outside the United States, employees' and partners' total direct salary cost will be increased by the premium customarily paid by other organizations for work at that location.

1.4 Time spent in either local or inter-city travel, when travel is in the interest of the work, will be charged for in accordance with the foregoing schedule; when traveling by public carrier, a maximum charge of eight hours per day will be made.

2.0 EQUIPMENT CHARGES

2.1 Computer control of project costs will be billed at a rate of \$1.25 per each \$50 of job charges or fraction thereof.

2.2 Other Dames & Moore equipment, if used, will be billed at the rates noted in the Appendix.

3.0 OTHER SERVICES AND SUPPLIES

3.1 Charges for services, equipment and facilities not furnished directly by Dames & Moore, and any unusual items of expense not customarily incurred in our normal operations, are computed as follows:

3.1.1 Cost plus 10 percent includes shipping charges, subsistence, transportation, printing and reproduction, long distance communication, miscellaneous supplies and rentals.

3.1.2 Cost plus 15 percent includes surveying services, land drilling equipment, construction equipment, testing laboratories, contract labor.

3.1.3 Cost plus 25 percent includes aircraft, watercraft, helicopter and marine drilling equipment and operation.

SCHEDULE OF CHARGES – APPENDIX

Dames & Moore

EQUIPMENT

AUTOMOTIVE

Vehicle, per hour (maximum of 8 hours per day)	\$ 4.00
Mileage, per mile	\$.25

SOIL

Soil sampling and compaction control equipment, per shift hour	\$ 5.00
Soil sample rings and containers, per sample	\$ 5.00

LABORATORY

Soil, water and biologic testing equipment – per employee, per hour	\$ 10.00
Dynamic Testing Equipment will be quoted as required	

DIVING

SCUBA diving, per diver, per day	\$100.00
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REPORT PREPARATION

Word Processing Equipment, per hour	\$ 10.00
In-House Reproduction, per sheet	\$.10

ENGINEERING COMPUTER SERVICES

The use of Dames & Moore's in-house computer facilities will be charged in accordance with the "Engineering Computer Applications Billing Schedule" (attached). Computer time and other services provided by outside vendors will be charged at cost plus 15%. Terminals, plotters, forms, and computer supplies will be charged at cost plus 15%.

FIELD

Because of the varied nature of equipment, location and use, these rates will be quoted as required.

GENERAL CONDITIONS

July 11, 1990

1.0 BILLING

- 1.1 Invoices will be issued every four weeks, payable upon receipt, unless otherwise agreed.
- 1.2 Interest of 1 1/2% per month (but not exceeding the maximum rate allowable by law) will be payable on any amounts not paid within 30 days, payment thereafter to be applied first to accrued interest and then to the principal unpaid amount. Any attorney's fees or other cost incurred in collecting any delinquent amount shall be paid by the Client.

2.0 WARRANTY AND LIABILITY

- 2.1 Dames & Moore warrants that its services are performed, within the limits prescribed by its Clients, with the usual thoroughness and competence of the consulting profession, in accordance with the attached standard for professional services. No other warranty or representation, either expressed or implied, is included or intended in its proposals, contracts, or reports.
- 2.2 Dames & Moore's liability shall be limited to injury or loss caused by negligence or willful misconduct of Dames & Moore, its subcontractors, and/or agents hereunder. Dames & Moore has neither created nor contributed to the creation or existence of any hazardous, radioactive, toxic, irritant, pollutant, or otherwise dangerous substance or condition at the site.
- 2.3 Dames & Moore's liability for injury or loss arising from (1) professional errors or omissions and/or (2) radiation, nuclear reaction, or radioactive substances or conditions; and/or (3) any other toxic, irritant, pollutant, or waste gases, liquids, or solid materials shall not exceed \$100,000 in the aggregate except for injury or loss caused by the sole negligence or willful misconduct of Dames & Moore, its agents or subcontractors.
- 2.4 Dames & Moore's liability for injury or loss arising from comprehensive general and automobile liability shall not exceed \$500,000 in the aggregate.
- 2.5 Increased liability limits may be negotiated upon client's written request, prior to commencement of services, and agreement to pay an additional fee.
- 2.6 The Client agrees to defend, indemnify, and hold Dames & Moore harmless from any claim, liability, or defense cost in excess of limits determined in paragraphs 2.3 and 2.4 above for injury or loss sustained by any party from exposures allegedly caused by Dames & Moore's performance of services hereunder, except for injury or loss caused by the sole negligence or willful misconduct of Dames & Moore, its agents or subcontractors.
- 2.7 In the event the Client makes a claim against Dames & Moore, at law or otherwise, for any alleged error, omission or other act arising out of the performance of its professional services,

and to the extent the Client fails to prove such claim, then the Client shall pay all costs, including attorney's fees, incurred by Dames & Moore in defending itself against the claim.

**DAMES & MOORE
STATEMENT OF
PROFESSIONAL STANDARDS**

Dames & Moore warrants that its services are performed, within the limits prescribed by its Clients, with the usual thoroughness and competence of the consulting profession, in accordance with the standard for professional services at the time the services are performed.

Dames & Moore will provide a person or persons having adequate technical training and proficiency for the scope of the assigned work.

Dames & Moore will exercise due professional care in the performance of assigned work and the preparation of reports.

Dames & Moore will provide adequate supervision for assistant staff members.

Dames & Moore will provide adequate internal controls for the review of work products.